

☀ Eat it or Gulp it?

The relative merits of nutrient bioavailability - via dietary supplements or via food – is an age-old debate that defies resolution. Each nutrient brings unique considerations to this question, consisting of the chemical form of the nutrient; its concentration in the food or supplement; its intended physiological effects; human factors such as age, sex, health status and genes; differing requirements through the lifecycle; other nutrients consumed or in the diet; amount of food in the GI tract; and drug interactions.

Herein is an overview of the debate facing two minerals at the forefront of human health.

☀ Selenium

Decades of research confirms that selenium is significantly more effective in the organic form in a food matrix, than in an inorganic form in supplements. Selenium is a trace mineral in the earth's crust, taken up and converted by plants to a form highly bioavailable to animals and humans alike. The human Daily Value (DV) of 70 mcg is relatively small yet absolutely essential for health maintenance. Its powerful anti-oxidant and disease prevention properties have been recognized by Dietitians of Canada. Current research focuses on the relationship between enhanced selenium intake and the prevention or treatment of a range of diseases including prostate cancer, AIDS and hypercholesterolemia. Brazil nuts are loaded with it – one ounce contains 544 mcg, or 780% of the DV. Three ounces of tuna provides 65 mcg, almost the entire DV. Whole grains, fish, shellfish, meat, poultry, eggs and beans are notable sources. Serum (blood) selenium in humans and animals in a particular region is directly proportional to that district's selenium soil content, such that high rates of selenium-deficient diseases can be directly correlated to selenium-deficient soil. To address this, animal feed used in selenium-deficient soil regions is supplemented with this mineral to ensure adequate intakes. Consumers are encouraged to benefit from a varied diet sourced from several growing regions.

☀ Calcium

In the words of a foremost authority, "Calcium is only useful to the skeleton once it is absorbed." (C. Weaver, 1992). Research into the bioavailability of calcium - essential to maintain bone strength and prevent osteoporosis – indicates that either food or supplement delivery systems can be compromised in several ways. Compounding the often heard question 'Which form is best?' is the fact that serum calcium is not a reliable indicator of deficiency, because the body will draw from bone deposits as required.

Dairy products supply 72% of the calcium in the US diet, such that milk drinkers consume 80% more calcium than non-milk drinkers. A study showed that the absorption of calcium in calcium-fortified soy milk was 75% less efficient than the calcium from cow's milk. Phytate – a component of nuts, seeds, plants and grains - can interfere with the intestinal absorption of several minerals, including calcium. However, a review of Asian vegetables in this low-dairy area of the world, showed that Chinese cabbage and soybean sprouts are bioavailable sources, having both more calcium content than milk powder, and, low levels of the plant-based inhibitors of dietary fiber, phytate and oxalate.

Dietary supplements offer several forms of calcium and a means to meet recommended intake. Keys to optimal absorption include the percentage of elemental calcium in the compound (see ingredient declaration), consumption with a meal, complete decomposition within the GI tract, and adequate Vitamin D intake, a calcium uptake facilitator. **FF**

☀ Some Web sites

http://www.has.uwo.ca/hospitality/nutrition/pdf/functionalfoods_antioxidants.pdf

<http://www.seleniumselect.com/bioavailability.htm>

<http://www.ars.usda.gov/is/pr/2002/020315.htm>

http://www.jacn.org/cgi/content/abstract/19/suppl_2/

© 2007 International Food Focus Ltd., 211 Carlton Street, East Office, Toronto, ON M5A 2K9 T: 416-924-3266

F: 416-924-2726 E: focus@foodfocus.on.ca

Food Fax is archived @ our Web site <http://www.foodfocus.on.ca>